

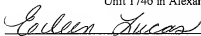
IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Application No.: 09/682,411  
Filing Date: August 30, 2001  
Inventor (first named): TANG  
Group Art Unit: 1746  
Examiner Name: JONATHAN CREPEAU  
Attorney Docket No.: 53797.5/US (Previously 45283.4)

---

**Certificate of Transmission Under 37 C.F.R. 1.8(a)**

I hereby certify that this document is being electronically transmitted on this date April 24, 2006 to the U.S. Patent and Trademark Office, Attention: Examiner Jonathan Crepeau, at Group Art Unit 1746 in Alexandria, VA 22313-1450

  
EILEEN LUCAS

DATED: April 24, 2006

---

**REQUEST FOR CONTINUED EXAMINATION  
UNDER 37 CFR 1.114  
AND**

**AFTER FINAL AMENDMENTS & RESPONSE TO FINAL OFFICE ACTION MAILED  
02/10/2005**

To: Assistant Commissioner for Patents  
Alexandria, VA 22313-1450

Sir:

This is in response to Notice of Abandonment mailed September 15, 2005, and to Final Office Action mailed February 10, 2005. This reply is filed with a request for continued examination under 37 CFR 1.114 and fee under 1.17(e).

Please enter the amendments and consider the remarks below.

**AMENDMENTS TO THE CLAIMS:**

1-10. [Previously Cancelled]

11. [Previously Presented] A solid oxide fuel cell comprising an electrode layer applied to an electrolyte layer wherein the electrode layer is not contiguous but rather is formed from a plurality of substantially discrete hexagonal elements separated by substantially linear and uniform gaps, such that adjacent hexagons have parallel edges, wherein the gaps take up less than about 2% of the surface area of the electrode.

12. [Currently Amended] A method of applying an electrode layer to an electrolyte layer in a SOFC comprising the steps of:

- (a) providing a screen defining a pattern comprising a plurality of discrete elements;
- (b) screen printing an electrode paste through the screen and onto the electrolyte such that the resulting electrode layer comprises a plurality of discrete elements which are separated by substantially linear, uniform and narrow gaps, **wherein the gaps take up less than about 5% of the surface area of the electrode,** such that adjacent polygonal discrete elements have parallel edges;
- (c) sintering the electrode layer.

13. [Previously Presented] The method of claim 12 further comprising the step of adding a contact paste layer over the electrode layer.

14. [Previously Presented] The method of claim 12 wherein the discrete elements have a regular hexagonal shape and the pattern comprises a honeycomb array of elements.

15. [Currently Amended] A solid oxide fuel cell comprising an electrode layer applied to an electrolyte layer wherein the electrode layer is discontinuous and comprises a plurality of substantially discrete polygonal elements separated by substantially uniform gaps, **wherein the gaps take up less than about 5% of the surface area of the electrode, and** wherein adjacent polygonal elements have parallel edges.

16. [Previously Presented] The solid oxide fuel cell of claim 15 wherein the polygonal discrete elements are hexagonal in shape.

17. [Previously Presented] The solid oxide fuel cell of claim 17 wherein said hexagons are regular hexagons.

18. [Previously Presented] The solid oxide fuel cell of claim 15 further comprising a contact paste layer applied to the electrode layer.

19. [Previously Presented] The solid oxide fuel cell of claim 18 wherein the contact paste layer is a conducting ceramics including lanthanum cobaltate.

20. [Previously Presented] The solid oxide fuel cell of claim 19 wherein the contact paste layer is not sintered prior to use.

21. [Cancelled]

22. [Currently Amended] The solid oxide fuel cell of claim **15** [21] wherein the gaps take up less than 2% of the surface area of the electrode.

23. [Previously Presented] The solid oxide fuel cell of claim 22 wherein the gaps take up less than about 1% of the surface area of the electrode.

**REMARKS**

Reconsideration of the application is respectfully requested.

1. Examiner has rejected claims 11-23 under 35 U.S.C. 103(a) as being unpatentable over JP 2-87472. In particular, Examiner states that the limitation of discrete elements are a matter of choice, and that the one skilled in the art would be sufficiently motivated to make gaps as thin as possible in the interest of increasing contact area and decreasing electrical resistance.

Applicant respectfully traverses that one skilled in the art would be sufficiently motivated to make gaps as thin as possible in the interest of increasing contact area and decreasing electrical resistance, to some limit greater than 5% of the surface area of the electrode, to avoid pressure drops that would interfere with uniform electrochemical reaction. Additionally, one skilled in the art would also be motivated to avoid gaps of less than 5% of the surface area of electrode, to avoid an increased gas diffusion related over-potential which would more than offset the decreasing electrical resistance. Furthermore, JP 2-87472 teaches discrete elements of electrodes arranged as circular dots. Applicant notes that it is mathematically impossible to obtain gaps between discrete elements of less than 5% of the surface area of the electrode, using circular shaped dots. For the reasons stated above, Applicant asserts that claims 11-23 are patentable over JP 2-87472 under 35 U.S.C. 103(a).

2. Applicant has currently amended independent claims 12 and 15 to include a quantitative recitation of gap size. Claim 21, which previously included a quantitative recitation of gap size, is currently cancelled. Claim 22, which previously depended on currently cancelled claim 21, is currently amended to depend on claim 15.

**CONCLUSION**

In view of the foregoing remarks and amendments, it is respectfully submitted that this application is in condition for allowance and allowance thereof is respectfully requested.

Respectfully submitted,

Zheng Tang

By: 

Edward Yoo (Reg. No. 41,435)

CORRESPONDENCE ADDRESS CUSTOMER NO. 22828